

CLAIMS

1. A filter for removing contaminants from water, said filter comprising:
a first porous filter part formed by setting an active carbon in a high-molecular low-melt index polymeric binder;
an inlet for directing water to be filtered to the first porous filter part, and
an outlet for directing water filtered by passage through the first porous filter part to a point of use.

2. The filter for removing contaminants from water according to claim 1 wherein the polymeric binder comprises a porous polymer with a melt index of from 1.1 - 2.3 g/10 min (ASTM D1238, 190°C, 15 kg Load).

3. The filter for removing contaminants from water according to claim 1 further comprising a second fibrous filter part comprising a hollow yarn membrane, and the inlet and outlet are arranged so that water to be treated passes from the inlet first through one of the first porous filter part and the second

fibrous filter part then through the other of the first porous filter part and the second
 6 fibrous filter part and to and through the outlet.

4. The filter for removing contaminants from water according to claim
 2 3 wherein the one of the first porous filter part and second fibrous filter part is the
 first porous filter part.

5. The filter for removing contaminants from water according to claim
 2 wherein the first porous filter has a peripheral surface through which untreated
 water passes in moving from the inlet towards the outlet.

6. The filter for removing contaminants from water according to claim
 2 further comprising a peripheral filtering layer around the first porous filter part
 through which water to be filtered is passed in moving toward the first porous filter
 4 part.

7. The filter for removing contaminants from water according to claim
 2 6 further comprising water-impermeable first and second caps attached in

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4 watertight relationship to the first porous filter part and one of the caps has an
opening for discharging water treated by the first porous filter part.

2 8. The filter for removing contaminants from water according to claim
3 wherein the first porous filter part is located externally of the second fibrous filter
part and water to be treated passes from the inlet from externally of the first porous
filter part to and through the first fibrous filter part to and through the second
fibrous filter part.

4 9. The filter for removing contaminants from water according to claim
1 further comprising a peripheral filtering layer around the first porous filter part
and water-impermeable first and second caps attached in watertight relationship
to the first porous filter part and one of the caps has an opening for discharging
water treated by the first porous filter part.

2 10. The filter for removing contaminants from water according to claim
1 further comprising a second filter part situated so that the first porous filter part
and second filter part are located one on top of the other.

11. The filter for removing contaminants from water according to claim
2 10 wherein the first porous filter part is above the second filter part, the inlet and
outlet are arranged so the water to be treated passes from the inlet to the first
4 porous filter part, through the first porous filter part to the second filter part, and
through the second filter part to the outlet.

12. The filter for removing contaminants from water according to claim
1 wherein the active carbon comprises a first particulate active carbon capable of
passing through a mesh of 60-100 and a second particulate active carbon capable
of passing through a mesh of 100, with the first and second particulate active
carbon being mixed in a ratio of 1:4 - 4:1.

13. The filter for removing contaminants from water according to claim
2 1 wherein the first porous filter part comprises polymeric binder in an amount of
10-25% by weight to active carbon and the first porous filter part has a density of
4 0.5 - 0.65 g/cm³.

14. The filter for removing contaminants from water according to claim
6 wherein the peripheral filtering layer comprises at least one of a fibrous material,
a non-woven fabric, and a woven fabric.

15. The filter for removing contaminants from water according to claim
3 wherein the hollow yarn membrane has pores of a size on the order of 0.01 - 5
 μm .

16. The filter for removing contaminants from water according to claim
3 wherein the hollow yarn membrane comprises at least one of polyvinyl alcohol,
polyacrylonitrile, polyvinyl chloride, polyethylene, polypropylene, 4-methyl-1-
pentene, polyester, polyamide, polysulfone, and cellulose derivatives.

17. The filter for removing contaminants from water according to claim
1 further comprising an adaptor for connecting the filter to a conventional tap water
faucet.

18. The filter for removing contaminants from water according to claim 1 further comprising a peripheral filter around the first porous filter part through which water to be filtered is passed in moving towards the first porous filter part.

19. The filter for removing contaminants from water according to claim 18 wherein the outlet is defined by a through hole.

20. The filter for removing contaminants from water according to claim 19 further comprising an adaptor for connecting the filter to a conventional tap water faucet.

21. The filter for removing contaminants from water according to claim 1 wherein the filter comprises an outer peripheral surface through which untreated water passes in moving from the inlet towards the outlet.

22. The filter for removing contaminants from water according to claim 1 wherein the first porous filter part has a cylindrical shape.

23. The filter for removing contaminants from water according to claim
6 wherein the peripheral filtering layer has a cylindrical shape.

24. The filter for removing contaminants from water according to claim
1 wherein the first porous filter part is made by a method comprising the steps of
mixing together a) a powdery or particulate active carbon and b) a high-molecular
low-melt index polymeric binder in a predetermined ratio to make a first mixture;
placing the first mixture in a mold having a height; vibrating the first mixture so that
it has a height in the mold that is 5-15% greater than a desired height for the first
porous filter part upon completion thereof; heating the first mixture to fluidize the
polymeric binder; pressing the first mixture in the mold to adjust the height of the
first mixture in the mold; cooling the first mixture in the mold to complete formation
of the first porous filter part; and separating the first porous filter part from the
mold.

25. A method of forming a filter part for removing contaminants from
water, said method comprising the steps of:

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mixing together a) a powdery or particulate active carbon and b) a high-molecular low-melt index polymeric binder in a predetermined ratio to make a first mixture;

placing the first mixture in a mold having a height;

vibrating the first mixture so that it has a height in the mold that is 5-15% greater than a desired height for the filter part upon completion thereof;

heating the mixture to fluidize the polymeric binder;

pressing the mixture in the mold to adjust the height of the mixture in the mold;

cooling the mixture in the mold to complete formation of the filter part; and separating the filter part from the mold.

26. The method of forming a filter part for removing contaminants from water according to claim 25 wherein the filter part has a weight and the pressing step comprises pressing the mixture with a force equal to up to ten times the weight of the filter part.

27. The method of forming a filter part for removing contaminants from water according to claim 26 wherein the pressing force is varied during the pressing step.

28. The method of forming a filter part for removing contaminants from water according to claim 25 wherein the polymeric binder comprises a porous polymer having a melt index of 1.1 - 2.3 g/10 min. (ASTM D1238, 190°C, 15 kg Load).

29. The method of forming a filter part for removing contaminants from water according to claim 25 wherein the active carbon comprises a first particulate active carbon capable of passing through a mesh of 60-100 and a second particulate active carbon capable of passing through a mesh of 100, with the first and second particulate active carbon being mixed in a ratio of 1:4 - 4:1.

30. The method of forming a filter part for removing contaminants from water according to claim 28 wherein the active carbon comprises a first particulate active carbon capable of passing through a mesh of 60-100 and a second

4 particulate active carbon capable of passing through a mesh of 100, with the first
and second particulate active carbon being mixed in a ratio of 1:1 - 4:1.

2 31. The method of forming a filter part for removing contaminants from
water according to claim 25 wherein the polymeric binder is present in an amount
of 20-25% by weight to the active carbon and the filter part has a density after
cooling of 0.5 - 0.65 g/cm³.

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